



HOME MEDICINES REVIEW (HMR) SERVICE



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ABSTRACT

Home Medicines Review (HMR) is a community-based collaborative service provided by General practitioners (GPs) and trained Pharmacists for demonstrating effectiveness in detecting, resolving and preventing the Drug Related Problems (DRPs) and counseling the patients, which helps in improving outcomes like their medication adherence and the overall health-related quality of life. HMR is a well-recognized and encouraged service by the Australian government and there are 'Accredited Pharmacists' (trained pharmacists in Australia) who provide the service, but it is a new concept in the developing countries including India. A comprehensive search for articles of HMR was done using PubMed and Google Scholar for studies performed up to the year 2016 using the keywords "collaborative" and "Home Medicines Review" through January, 2017. All the relevant papers were identified that directly discussed about HMR. This review discusses the importance of having a HMR and focuses on the implementation with the proposed plan and recommendations. It also summarizes HMR as an emerged tool worldwide to improve rational use of medicines, minimization of cost and improvement of health-care outcomes such as patient's medication adherence behavior and health related quality of life, mainly in the elderly.

Keywords: Home Medicines Review, Collaborative Health Service, Pharmacist, General Practitioner.

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INTRODUCTION

A collaborative service that involves the General Practitioners (GPs), Pharmacist and the patient is known as Home Medication Review (HMR).^[1] HMR is a well-recognized and encouraged service by the Australian government and there are 'Accredited Pharmacists' (the trained pharmacists in Australia) who provide the service, but it is a new concept in the developing Asian countries including India.^[1-3] GPs refer the patients to the trained pharmacists and inform the pharmacist about the clinical condition and prescribed medications and the need for HMR.^[1, 2] The trained pharmacist fixes an appointment with the patient for a home visit and collects all the relevant clinical and therapeutic details from the patient to assess the Drug Related Problems (DRPs) and medication adherence behavior and the same is discussed with the GPs which helps to improve the medication adherence behavior and health related quality life in patients.^[1-3]

The primary aim behind HMR process is to consolidate the knowledge and professional abilities of the trained pharmacist and GPs for the necessary medication related information to the patient. ^[2] The communication between GPs, trained pharmacists and patients helps the pharmacist to comprehend patient's circumstances. Additionally, the trained pharmacist gets a better understanding and access to the social or dialect boundaries and support from the carers and family members. The patient's data like genuine medicine utilization, extra non-endorsed solutions and comprehension of the patient's inspiration driving real as opposed to coordinated medicine use and the patient's well-being and prescription information is managed as the benefits of HMR and the data collected is used to distinguish real and potential DRPs.^[2]

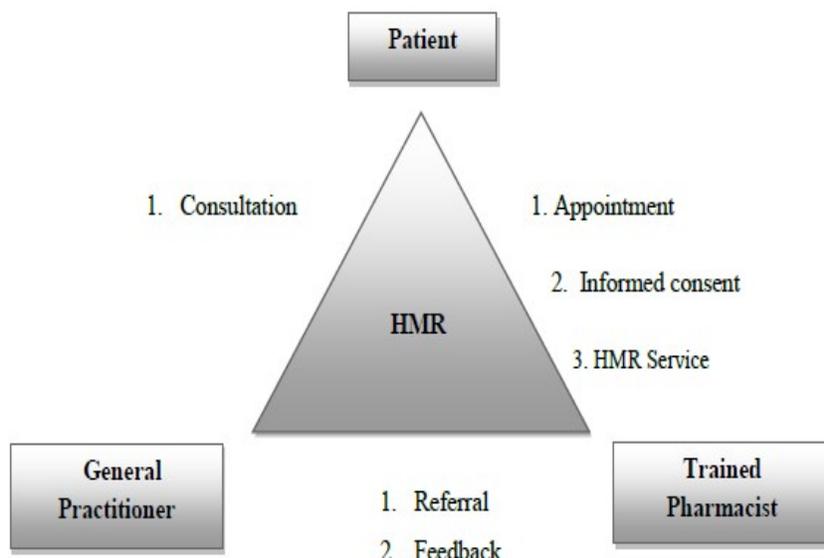


Figure 1: The General Process Used in HMR

The HMR procedure is useful in identifying potential medication related issues in the community and to increase patient's benefit from the prescription regimen.^[4] HMR service is thought to benefit patients who were diagnosed with chronic illness, elderly (the geriatric population) and who regularly require home based review for the prescribed medicines and clinical condition and DRPs (if any) during treatment.^[1, 5] It is beneficial to the patients who were prescribed with multiple medications (polypharmacy) which could result in potential DRPs.^[2, 5] This study in India aims to assess the status and awareness of HMR services among Indian population by training the community pharmacists to make them 'trained pharmacist' similar to Australian 'Accredited Pharmacist'. It also aims to implement the HMR service in Mysore, India to improve the patient's medication adherence and thus help in improving their health-related quality of life. HMR was introduced into the Medical Benefits Scheme in October 2001 as support for the National Medicines Policy 2000 by the Australian Federal Government to reduce unnecessary drug-induced hospital admissions.^[6] The service is provided by the GPs and trained pharmacists to patients who have been prescribed with multiple medicines, to improve the patient's benefits from their prescription regimen and to minimize or address the DRPs which would have otherwise resulted in medication non-adherence and prevent possible treatment failure.^[4] This helps to reduce the frequent need of hospitalization or the need to visit the GPs mainly for the geriatric

patients presented with multiple medications. The main benefits of HMR is that it aids the patients to deal with their medicines at home.^[1, 5, 7] The GPs survey the patient's clinical requirement for a HMR and starts an administration service requesting that the patient designate their favored group pharmacy.^[3, 8] The trained pharmacist based on the visit to the patient for HMR may suggest changes required in prescription as per the patient's current therapeutic need and helps the GPs in making prescription changes by providing constructive suggestions related to the patient and medicines.

Similar studies like HMR has been conducted in different countries worldwide to effectively address clinically significant DRPs, enhance the medication adherence behavior of the patient, improve the health-related quality of life, and possibly improve the connections between the GPs, pharmacists and the patients.^[9] Similar researches in the area affirmed that those in most prominent need of a HMR are the ones to the least extent liable to get this service. The prerequisite in the HMR service is the connection of pharmacist with the patient at patient's home. This requires a wide extent of information on pharmaceuticals, as well as confirmation based rules and contemporary administration of an assortment of therapeutic conditions. The pharmacist regularly get updated with the GPs and provide suggestions for potential DRPs or regimen to make changes to the medication management plan (if required) which improves the outcome, related to medication adherence.

This proven concept of HMR in developed countries has been started as a pilot study in Mysore, India for the benefit of the patients and to ease the GPs as well as the overall treatment process by the involvement of pharmacists in the study.

MATERIALS AND METHODS

Method of Data Acquisition: A literature review was done using PubMed and Google Scholar search, and the

keywords used in the search were “Collaborative Care” and “Home Medicines Review”.

Literature Review for HMR Service Globally: Different exploratory studies directed on HMR administrations worldwide had concerns about prescription use advancement, minimization of DRPs and provision of better medicinal services for improvement in results in patients with chronic ailment and polypharmacy. The summary of various studies is presented in Table 1.

Table 1: Key benefits of HMR

The identified key benefits of having a HMR: ^[1-3, 6, 10]
1. Enhancing the patient and pharmacist connections
2. Improved health literacy of high-risk patients
3. Special care to geriatric patients
4. Service helpful to enhance self-medication management education
5. Education in the needs of medication in high-risk chronic patients
6. Optimizing health care expenditure

Table 2: Previous studies done on HMR in different countries

S. No.	Author Name	Country	Year	Method	Study findings/ Remarks
1.	John Papastergiou et al[4]	Canada	2016	Observational study	Addressed pharmacotherapy issues
2.	Zin et al[11]	Malaysia	2015	Prospective randomized controlled study	Significant improvement in health and quality of life of patients
3.	Julie Ahn et al[12]	Australia	2015	Semi-structured interviews of patients	Enhance patient understanding, better outcomes
4.	Amrith Kaur Dhillon et al[10]	Australia	2013	Semi structured interviews with the GPs	Polypharmacy reduction and education for GPs
5.	H F Kwint et al[13]	Netherlands	2012	randomized controlled trial	DRPs identified
6.	Preethy kothiyal et al[5]	India	2012	Interview based	Patient's unaware of HMR service
7.	Joel S. Willis et al[14]	USA	2010	Interview	Successful implementation
8.	P Awanish et al[8]	India	2009	Quantitative prescription audit	Compliance issues of the elderly were undergoing self-medication
9.	Margaret Pacini et al[15]	UK	2007	Randomized controlled trial	The incremental cost per life year gained through the intervention patients
10.	Richard Holland et al[16]	UK	2007	Meta-analysis and systematic review of Randomized controlled trials	Interventions may improve drug knowledge and adherence.
11.	Ronald L Castelino et al[6]	Australia	2006	Retrospective analysis	Potential to minimize risk of DRPs and improve patient health outcomes
12.	Lesley White et al[9]	Australia	2006	Group discussion with the patients	Lack of awareness about the program among the study population
13.	David P Alldred et al[17]	UK	2002	Randomized controlled trial	Identification of DRPs and required interventions
14.	Thijs H. Vinks et al[18]	Netherlands	2002	A pharmacy-based controlled trial	positive influence; reduction of potential DRPs
15.	Andrew L Gilbert et al[19]	Australia	2002	Participatory action research	Successfully implemented and was acceptable to all participants

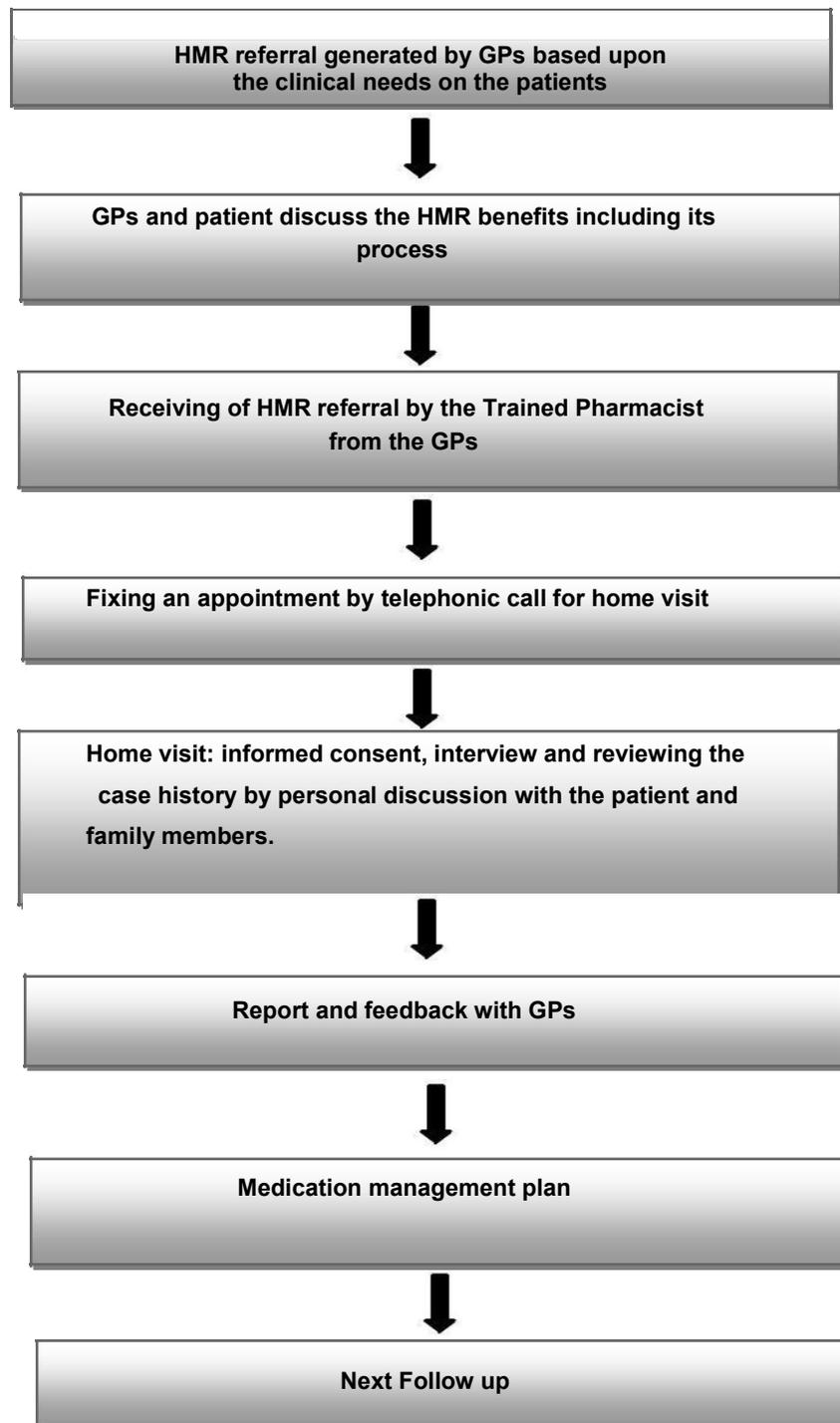


Figure 2: Flow-chart showing HMR procedure

HMR Model in India

In developing countries including India, the HMR service can be effortlessly adjusted to nearby circumstances. Chronic diseases are of great health concern in India and about a few million individuals are influenced by different chronic diseases. Trained pharmacist conducting HMR will be helpful in implementing prescription audit in India, similar to the situation in Australia to help the Indian clinical pharmacist to contribute further to the health care needs of their communities.^[7]

One of the first workshops for HMR in India was under the guidance of Dr. B. G. Nagavi, JSS College of Pharmacy, Mysore, held in the year 2005, India which included seminars on HMR in India and had a gathering of Indian and Australian pharmacists. The geriatrics are the proposed target population for HMR in India because they are the ones who are in the increased need for HMR service and at higher risk of DRPs. This can be attributed to their lack of awareness regarding wellbeing, general checkups, monitoring of illness and polypharmacy.^[7]

Global scenario of HMR compared to India

1. **Mode of receiving referral and Communication between the GPs and HMR pharmacist:** In other developed nations like Canada and Australia, where HMR service is well established, they use software-based referral system to conduct this service. But in India, HMR is a new concept and we do not have any established setup for this service. So, we follow a telephonic referral system from GPs: where the GP calls the pharmacist,

who visits the GPs for additional information regarding the referral and a further HMR service is carried out.^[3, 9, 14]

2. **Frequency of HMR:** Follow-up the patient once every month by visiting their homes and an additional weekly telephonic update about DRPs (if any) with the clinical details will help in improving the medication adherence and quality of life of the patients^[3, 5, 8, 20]
3. **Payment to Trained Pharmacists for HMR:** There is a fixed payment from the Australian government (Department of Health and Aging) of Australian Dollar (AUD) 180 to AUD 200 for pharmacists providing HMR service for a single visit to a patient and there is also a provision of providing extra AUD 100 for visit to geriatric care by the government. But currently Indian government is not providing any funding to the pharmacists and there are no established guidelines about HMR service in India which makes our pilot study in Mysore, India, an important step to create awareness among the patients, other GPs and the Ministry of Health and Family welfare, Government of India as well^[5,10, 21, 22]

Need and benefits of HMR in developing nations

1. **Identify the potential DRPs:** HMR service helps in identifying various potential DRPs which is ultimately beneficial for the patients. Adverse drug reactions, drug interactions, untreated indications, drug use without indication, sub therapeutic dose,

improper drug selection, alternative dosage forms, drug duplication are the DRPs which are addressed in HMR and suggestions are given to the GPs for any changes in drug therapy management (if required). This will help to improve medication adherence behavior and health related quality of life of the patients.^[13, 16, 18]

2. **Rational use of medicines:** It is one of the common problem seen in geriatric patients. Based on the patient condition, as seen by pharmacist conducting HMR, a recommendation can be given with feedback to the concerned GPs for changing any regimen or drug (if required). This increases the rational use of drugs.^[8,14,19]
3. **Maximize health outcomes:** Identifying and addressing DRPs helps in maximizing the health outcomes from the treatment.^[9, 12]
4. **Enhance the communication between the GPs and pharmacist:** The GPs and pharmacists work together for HMR. The pharmacist helps in the areas of all drug related issues including dose adjustment and the GPs can help with the diagnosis part. ^[1, 9, 10]
5. **Minimize medication misadventure by the patient:** The drug misuse or over the counter (OTC) medication use is decreased or completely stopped as there is a provision for weekly telephonic update of clinical and therapeutic details of the patient by pharmacist along with the monthly follow-up in our HMR proposed plan for Mysore, India.^[3, 10]

Economic benefits of HMR in India

The Global Economic Burden of Non-Communicable Diseases (NCDs) 2011 report by the World Economic Forum and Harvard School of Public Health estimates that untreated conditions of the four main NCDs and mental health issues would lead to a loss of \$47 trillion between 2010-2030. ^[23] Another report which focused mainly on the low and middle-income countries (LMICs) reported that these countries could face a loss of more than \$7 trillion in output from 2011 to 2025 for the four main NCDs. ^[24] NCDs pose a great threat to the human and economic aspects of India. NCDs account for approximately 60% of all deaths in India causing a loss of \$4.58 trillion before 2030. Thus making them one of the leading causes of death much ahead than injuries and communicable, maternal, prenatal and nutritional conditions. India has to put in 4-10% of the annual economic output for the NCD. ^[25]

Combining the direct and the indirect treatment costs of a chronic disease provides a complete measurement of the economic burden. WHO estimated a loss of \$1.25 trillion by 2015 in five major developing countries for the management of diabetes, stroke and cardiovascular diseases which includes India at expense of \$336 billion.

A few Indian studies have analyzed the direct and indirect costs for certain chronic diseases like a study by Shobhana *et al*^[26] where they estimated that the indirect cost for diabetic population of Chennai accounted to around INR 5,300 per event. Furthermore, estimated that the annual income losses to households affected by CVDs in India in 2004 were 144-158 billion INR, which occupied more than one-third of all income losses out of all chronic diseases.^[25]

Characteristics of the study population:

HMR is such an initiative that can change the fate of NCDs induced economic stress. HMR follows a fixed schedule in which the pharmacist consult the patient from home as scheduled, provides counseling to the patient, addresses and resolves any DRPs of the patient. The same is reported to the GPs with feedback and constructive suggestions regarding medication dose or regimen change required (if any). The pharmacist updates the GPs regarding each HMR follow-up which ultimately benefits the patient with better medical care.

HMR will help to avoid the unnecessary health costs due to benefits from pharmacists' intervention and counseling to the patient. Individualized follow-ups will help to avoid the unnecessary indirect costs which will eventually lead to much lesser direct costs.^[15, 17, 21]

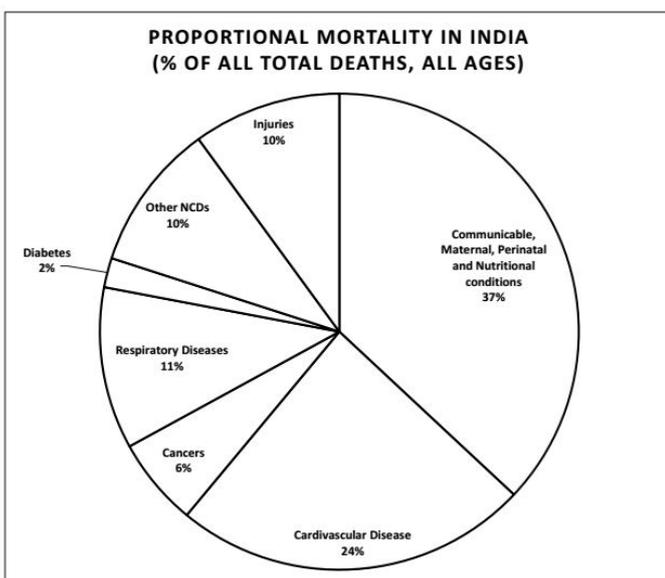


Figure 3: [Source: World Health Organization, 2011] - India: Proportional mortality Pie-chart for percentage total deaths due to various diseases. (HMR can be beneficial in these.)

Barriers to Home Medicines Review in India

1. GPs perceptions towards the pharmacists: In India, Pharmacy practice is a new concept and all the GPs may not be aware of it.^[1, 3, 10]
2. Patient's lack of awareness about HMR: Patients may be unaware about the existence or advantages of HMR as this study is a new concept in the nation.^[5, 12, 14, 15]
3. Patient's perception about pharmacist: The patients may find it unnecessary or, insecure to reveal their medical history to a pharmacist as pharmacy practice is not well established in India.^[5, 9, 12]
4. Lack of Trained pharmacists for HMR: There is a lack of well-trained pharmacists or consultant who can provide HMR services in India. This is one of the major barriers as
5. pharmacy practice is relatively a new and less recognized field in India.^[5, 12, 14, 15]
6. Lack of online access in every area of India: The HMR service is easily carried out in developed nations using the computerized online software which increases the effectiveness and speeds the whole communication process between the GPs and pharmacists for HMR referral and feedback. But India is a developing nation where majority of population is unaware of the use of
7. online communication and not trained for the software use.^[5, 12, 14, 15]
8. Language barrier: India is a nation of diverse languages and there are several languages spoken in

different regions. This makes it difficult for the better communication between the pharmacists and GPs to provide home medication review and consultation to the patients respectively.^[5, 12, 14, 15]

9. Lack of funding and support from government: In India, there is no funding from government for HMR pharmacist as this is a new service in India. There is a need to make the government aware of the benefits and usefulness to get the proper support and funding for HMR.^[5, 12, 14, 15]

- To improve awareness about the benefits of Home medicine review
- To develop Home Medication Review guidelines
- To develop a software based referral system
- Use the application of essential medical devices for checking BP and sugar level
- To make HMR service as a part of pharmacy services for better pharmaceutical care.
- To assess the cost savings due to HMR services.

India is a potential country which requires HMR service which is also substantial by the pilot study conducted in Mysore. HMR improves rational use of medicines, minimizes cost due to rational use, and improves patient's medication adherence behavior, thus patient health-care outcomes are improved. Efforts can be taken up to bring up HMR in India. It may be possible when pharmacists are trained and appointed as HMR pharmacist. We feel that Government of India should take up an initiative to implement rules, regulations and guidelines for bringing up HMR service in all the states of India for the benefit of the nation, similar to the initiative by the government of developed countries where this service has already been implemented.

Table 3: Additional Benefits of HMR

HMR has following additional benefits: ^[15-17, 21, 26]
1. Prevent the frequent hospitalization of high-risk patients or, Post-Discharge Patients (PDPs)
2. Prevent unwanted consultations of Patient with GPs or, Specialists
3. Minimize medical investigations or, tests
4. Minimize total health-care cost

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